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Selected Speeches and News Releases

July 13 - July 20, 1989

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News Releases

U.S. Department of Agriculture • Office of Information

NEW GENETICALLY ENGINEERED INSECT RESISTANCE TO BE FIELD-TESTED IN TOBACCO

WASHINGTON, July 13—The U.S. Department of Agriculture has approved field tests on tobacco of a new type of genetically engineered insect resistance developed by Calgene, Inc. of Davis, Calif. The tests will begin immediately in Yolo County, Calif.

“Currently, genetically engineered insect resistance comes only from a naturally occurring toxin in the soil bacterium, *Bacillus thuringiensis*, and is effective only against some members of the group of insects that begin life as caterpillars,” said Larry B. Slagle, acting administrator for USDA’s Animal and Plant Health Inspection Service. “If successful, this new mechanism could protect plants from a much broader range of insect pests without using toxic chemical insecticides.”

The new insect resistance mechanism works by disrupting insect digestion. Known as a trypsin inhibitor, it prevents common insects pests such as corn rootworms and flour beetles from turning protein into usable food. The resistance mechanism was identified and the gene was extracted from the cowpea, or black-eyed pea. Historically, this pea has been safely consumed by humans and animals.

Calgene scientists will compare resistance to the corn earworm (*Heliothis zea*) in two groups of genetically altered tobacco plants. One group will carry the pea-gene coding for the enzyme inhibitor while the other will carry the bacterial gene for the insect toxin.

APHIS has completed an environmental assessment evaluating possible agricultural or environmental hazards associated with the experiment and has found no evidence of significant impacts. For copies of the environmental assessment, contact Mary Petrie, USDA, APHIS, Room 847, Federal Building, 6505 Belcrest Road, Hyattsville, Md., 20782.

Anita Brown (301) 436-5931

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USDA ANNOUNCES PREVAILING WORLD MARKET PRICE
FOR UPLAND COTTON

WASHINGTON, July 13—Under Secretary of Agriculture Richard T. Crowder today announced the prevailing world market price, adjusted to U.S. quality and location (adjusted world price), for Strict Low Middling (SLM) 1-1/16 inch (micronaire 3.5-4.9) upland cotton (base quality) and the coarse count adjustment in effect from 12:01 a.m. Friday, July 14, through midnight Thursday, July 20.

Since the adjusted world price (AWP) is above the 1987 crop and 1988 crop base quality loan rates of 52.25 and 51.80 cents per pound, respectively, the loan repayment rate for 1987 crop and 1988 crop upland cotton during this period is equal to the respective loan rates for the specific quality and location.

The AWP will continue to be used to determine the value of upland cotton that is obtained in exchange for commodity certificates.

Based on data for the week ending July 13, the AWP for upland cotton and the coarse count adjustment are determined as follows:

Adjusted World Price

Northern Europe Price	79.04
Adjustments:	
Average U.S. spot market location	11.86
SLM 1-1/16 inch cotton	2.00
Average U.S. location	0.42
Sum of Adjustments	-14.28
ADJUSTED WORLD PRICE	79.04 cents/lb.

Coarse Count Adjustment

Northern Europe Price	75.07
Northern Europe Coarse Count Price	-74.83
	<hr/>
	3.79
Adjustment to SLM 1-inch cotton	-4.15
	<hr/>
	0.18

COARSE COUNT ADJUSTMENT 0 cents/lb.

The next AWP and coarse count adjustment announcement will be made on July 20.

Charles Cunningham (202) 447-7954
#

USDA CONFRONTS POSSIBLE GLOBAL CLIMATE CHANGES

WASHINGTON, July 14—Amid forecasts of potential global climate changes, the U.S. Department of Agriculture has established a new position to coordinate department-wide efforts to protect the nation's crops and forests.

Charles E. Hess, assistant secretary for science and education, today announced the appointment of Gary R. Evans as his special assistant for global change issues. Evans was deputy administrator of USDA's Agricultural Research Service, overseeing its research projects including those on soil, water and air.

He is a USDA representative on the Intergovernmental Panel for Climate Change. Evans holds a Ph.D. in natural resources and has done research on modeling ecological processes.

Hess said the department is developing "a working strategy aimed at unifying existing department initiatives and planning new efforts." Evans will coordinate activities, Hess said, working with scientists, economists and analysts in seven USDA agencies and also at land grant universities. These agencies are: Agricultural Research Service, Cooperative Extension Service, Cooperative State Research Service, Economic Research Service, Forest Service, Soil Conservation Service and the World Agricultural Outlook Board.

"We need to know what could happen and what can be done to assure dependable supplies of food and fiber," Hess said.

"There are climate experts who claim the 1988 drought was evidence that global warming has already begun," he said. "A conclusive link has not been proven, but the threat of global warming from heat trapped by so-called greenhouse gases is too much of a risk to ignore." Among the gases are carbon dioxide, chlorofluorocarbons, methane, nitrogen oxides and halons.

Some of these gases also seem to be causing a thinning of the stratospheric (high level) ozone layer. This layer filters out a large part of the ultraviolet solar rays before they enter the earth's atmosphere.

Hess said these rays can limit the growth of sensitive crops. USDA scientists are investigating how increased ultraviolet radiation, air pollution, elevated temperatures, drought and other climate changes may influence photosynthesis and other key processes in plants. They are also trying to learn how plants differ in their ability to adapt to those projected changes in global climate.

USDA studies—some dating back to the 1950's—have shown “substantial damage to crops and forests from atmospheric pollutants, including low level ozone,” he said.

“We need to find out not only how global changes might impact agriculture and forestry, but also how agriculture and forestry might be contributing to the changes,” Hess said.

He said computer simulation models will play an essential role in USDA's working strategy. Data for the models will come from laboratory studies, outdoor crop growth chambers and field experiments. Economists will assess the effects of climate change on farm costs, forest management and the marketplace.

Evans and other USDA scientists represent the department on the Intergovernmental Panel for Climate Change, formed by the United Nations Environmental Program and the World Meteorological Organization in Geneva, Switzerland last November. The panel will issue a report to the United Nations by the fall of 1990.

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USDA POSTPONES COLLECTING REFUNDS DUE UNDER 1988 FARM PROGRAMS

WASHINGTON, July 14—Producers who owe refunds for advance deficiency payments received under the 1988 commodity price support and acreage reduction programs will not be required to repay them until after Dec. 31, Secretary of Agriculture Clayton Yeutter announced today.

Yeutter said the repayment deadline was changed June 30 when President Bush signed the 1989 dire emergency supplemental appropriation legislation. Before this legislation, refunds would have been due Sept. 1 for corn and sorghum producers, and July 31 for wheat, barley, oats, upland cotton and rice producers.

Producers who owe refunds include:

—Barley and oat producers who received advance deficiency payments, since the final 1988 payments are less than the payments advanced. The refunds, due after Dec. 31, will be 30.4 cents per bushel for barley and 12 cents per bushel for oats.

—Producers who received both advance deficiency payments and disaster payments under the Disaster Assistance Act of 1988 for loss of production. Producers must refund advance payments on that part of their intended production for which they also received a disaster payment. These refunds are also due after Dec. 31 with amounts per bushel set at 61.2 cents for wheat, 44 cents for corn, 43.2 cents for sorghum, 30.4 cents for barley, 12 cents for oats; also, .66 cents per pound for rice and 6.4 cents per pound for upland cotton.

Final 1988 payment rates have not been determined for corn and grain sorghum. It is expected that a refund will be required for corn but not for grain sorghum. These refunds are also due after Dec. 31.

Producers required to make refunds will be notified of the amount around Dec. 1.

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#

NEW EDIBLE COATINGS MAY PROTECT FRESH FOOD

WASHINGTON, July 17—Edible coatings made from milk or other farm products could keep fruits and vegetables fresh longer in the market and at home.

That's the aim of U.S. Department of Agriculture scientists working to protect fresh food's taste, texture, color and nutritional value, says Attila E. Pavlath, a chemist with the Agriculture Research Service.

A team of ARS scientists is testing casein, milk's major protein, for use in a coating, Pavlath said. He is in charge of the research at the agency's process chemistry and engineering laboratory in Albany, Calif.

So far, experiments with a nearly invisible coating that includes casein seem promising, he said. A small amount of vitamin C is added for increased protection against browning.

At the Albany lab, small pieces of sliced and peeled apple, dipped in the coating, stayed fresh for several days. Unprotected pieces shriveled and turned brown within a few hours.

To improve the casein-based film, the scientists now want to tighten the molecular structure of the protein, thereby blocking water's escape and yielding a thinner film. That might take two years, Pavlath said.

Milk's potential in edible coatings would put this commodity to new use, he said. Safe-to-eat films that the tongue cannot feel and the taste buds cannot detect also could be made from the protein in soybean, corn or wheat. Such coating might resolve consumer preferences that seem to be at odds.

"Some people who like fresh produce don't necessarily want to spend time in their kitchen washing, slicing, peeling, pitting and paring," Pavlath said. "It's part of the trend toward buying food that is ready to use and easy to store."

A coating that improves upon nature's packaging of fresh foods, Pavlath said, would allow more types of produce to be pre-sliced and packaged. That would be good news, he added, for busy consumers, cooks at restaurants and others in the food industry.

Future coatings may have other potential uses, he said. They might come in handy for keeping fillings in pizzas or preventing pies from soaking the crust.

A new, casein-derived coating might meet the three requirements of an ideal edible coating, said John M. Krochta, former chemical engineer at the Albany lab who now is at the University of California at Davis. These are:

- Keep out microbes that promote softening, browning, mold and other types of decay;

- Trap vital moisture in produce to keep it fresh—that's why supermarkets install automatic misters or water hoses in the produce section;

- Let the produce "breathe"—take in oxygen and give off carbon dioxide—and perhaps even slow down this respiration to prolong shelf life.

Krochta said edible coatings have been made before from milk, but have not been used for sliced fresh fruits and vegetables.

Unlike waxes on cucumbers or other edible coatings such as the "skin" on sausage, new films for tomorrow's produce could be modified to add new flavors or colors to standard fare, Pavlath said. One possibility is freshly sliced pears, protected with a somewhat thicker protein coating that's flavored with red cherries.

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INFANTS' BREATH SAMPLES HELP RESEARCH COMBAT CHRONIC DIARRHEA

WASHINGTON—A worried mother in a developing country brings her baby daughter to a rural clinic hundreds of miles from a modern hospital. The infant has had recurring diarrhea for weeks and is becoming malnourished.

What available foods can the health worker give the child while allowing her intestinal tract to recover?

Scientists at the U.S. Department of Agriculture's Children's Nutrition Research Center in Houston, Texas, are analyzing breath samples from infants living on three continents to find answers.

Houston researchers are determining from the samples how much glucose sugar infants with chronic diarrhea actually absorb. Glucose sugar is the basic unit of cereals and all complex carbohydrates.

In their own countries, the infants were fed a 5-percent glucose drink containing a stable isotope of carbon, C-13. Breath samples taken before and for two hours after the feeding were sent to the Houston center, a world leader in developing and using harmless, nonradioactive isotopes for nutrition research.

At the center, a part of USDA's Agricultural Research Service, the breath samples were analyzed to detect changes in the level of C-13 exhaled as carbon dioxide. This indicates whether the infants were absorbing and metabolizing the glucose, said pediatrician Carlos H. Lifschitz.

Researchers found that these infants have as much difficulty absorbing glucose as infants born with a genetic inability to absorb the sugar.

"Many babies develop chronic diarrhea after an acute bout. This can lead to severe malnutrition, which predisposes the child to more severe diarrhea or chronic infections," said Lifschitz, who led the study funded primarily by the National Institutes of Health.

He said the ability to digest milk sugar, or lactose, goes first during diarrhea. Infants have to receive supplements of other sugars.

"The bottom line," Lifschitz said, "is that gastrointestinal damage is such that these infants are unable to absorb the amount of glucose in some rehydrating solutions."

In the United States and in other developed countries, most infants get intravenous feeding before they become severely malnourished. But in developing countries, health care workers often don't have this option, he

said. "They have to rely on local food sources such as rice cereal to replenish infants with chronic diarrhea.

"We want to develop appropriate diets which will enable these children to stay in a fair state of nutrition while allowing the bowel to recover. "We're looking at the role nutrition plays in healing: What foods will allow healing to occur?"

The Houston scientists, who are affiliated with Baylor College of Medicine and Texas Children's Hospital, collaborated with researchers in Brazil, France and East Germany to study infants with different health problems affecting absorption and compare them with healthy infants.

Of the 17 infants studied, five had chronic diarrhea and malnutrition, four had severe malnutrition but no diarrhea, five others were born with the inability to absorb glucose and a similar sugar, and three, who lived in Houston, were healthy.

From the breath samples, Lifschitz and colleagues were able to identify those who had difficulty absorbing the sugar and determine the degree of malabsorption. They found that severely malnourished infants, who don't have diarrhea, absorbed the sugar nearly as well as healthy infants.

"Normally, the isotope begins to appear in the breath within five minutes and is at its maximum by 10 minutes," Lifschitz said. "It took 30 minutes to appear in the breath of infants with chronic diarrhea and those with congenital malabsorption.

"And their total C-13 output for two hours was less than one-third that of healthy infants and those who were malnourished but didn't have diarrhea."

This test "clearly identified the children with severe glucose malabsorption," he said. Whether it will identify less severe cases remains to be tested.

The test is noninvasive, unlike the current method of passing a tube through the infant's nose and sampling contents from the small intestine, he said.

The Houston researchers are collaborating on a similar study with researchers in Guatemala and will begin a third study with their Brazilian collaborator to look at what happens to sugar that is not absorbed in the small intestine.

Judy McBride (301) 344-4095

Issued: July 18, 1989

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FGIS REPORT SHOWS QUALITY CHARACTERISTICS DOWN IN 1988 SOYBEAN CROP

WASHINGTON, July 18—The latest report on the quality of domestic soybeans by the U.S. Department of Agriculture's Federal Grain Inspection Service shows that in 1988 only 14 percent of the samples in the study had earned the U.S. number 1 grade, down from 20 percent that had earned the top grade in the previous year.

The report also showed that the amounts of split soybeans, damaged kernels and foreign material were up significantly in 1988 over 1987, and that average test weight per bushel was down.

FGIS Administrator W. Kirk Miller said that the severe drought in the Midwest last year affected soybean quality.

The report is based on FGIS' annual summary of randomly selected samples of all official inspections performed on new-crop soybeans during the first four weeks following the start of local harvests throughout the country. The average quality of these samples is indicative of the quality of all soybeans officially inspected during the period. The survey of the 1988 soybean crop included 5,449 samples.

For more information and copies of the report, including a detailed summary of the study with averages by grade and state, contact Allen A. Atwood, USDA, FGIS, P.O. Box 96454, Washington, D.C. 20090-6454.

Allen A. Atwood (202) 475-3367

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YEUTTER ACCEPTS USDA RURAL DEVELOPMENT REPORT

WASHINGTON, July 18—Secretary of Agriculture Clayton Yeutter announced today that he has received the recommendations of the U.S. Department of Agriculture's Rural Revitalization Task Force. The task force, chaired by John Musgrave, West Virginia State Director for the Farmers Home Administration, is composed of representatives of various USDA agencies with rural development interests.

The task force report, "A Hard Look at USDA's Rural Development Programs," makes 17 specific recommendations for enhancing the effectiveness of USDA's rural development efforts. "The recommendations are realistic, focusing much more on leadership, creativity and cooperation with local citizens than on grandiose federal

programs,” Yeutter said. “The task force should be commended for their diligence and candor in evaluating the Department’s present programs, and I have asked Under Secretary for Small Community and Rural Development Roland Vautour to prepare specific implementation proposals based on these recommendations by August 15.”

Yeutter appointed the task force in February to examine USDA’s rural development resources and programs and make recommendations for improvement. The task force report is available to the public by contacting the Office of the Undersecretary for Small Community and Rural Development, Room 219-A, Administration Building, USDA, Washington, D.C. 20250; (202) 447-4581.

Kelly Shipp (202) 447-4623

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FOREST SERVICE RESEARCHERS LOOK INTO GLOBAL CLIMATE CHANGE

WASHINGTON—What would happen to the environment if predictions of global climate change become a reality and the earth’s temperatures rise? There’s no easy answer to this question, but some scientists with the U.S. Department of Agriculture are conducting studies to try to predict the results.

One such study by USDA’s Forest Service is taking place in the mountains of Wyoming. Here in the alpine splendor of the Snowy Range Mountains of the Medicine Bow National Forest, Douglas Fox, chief meteorologist with the FS Rocky Mountain Forest and Range Experiment Station in Fort Collins, Colo., and his associates are trying to determine the long-term environmental effects of global climate change “Our research will give scientists some indication of how the mountain ecosystem would respond to climate change, Fox says. “Understanding such changes is the first step in developing strategies to cope with and possibly alleviate the problem.”

Fox monitors the ecosystem and climatic changes from the Glacier Lakes Research Station, located 11,000 feet high in the treeless, snow-covered tundra, west of Laramie, Wyo.

Fox says Glacier Lakes is in an optimal spot for atmospheric testing because the site is located in an alpine/subalpine transition zone—an area where continuous forest cover gives way to a treeless alpine environment.

“Trees do not survive in an alpine ecosystem,” Fox explains.

“However, lower on the mountain, a continuous cover of conifer trees characterizes the subalpine zone. The transition zone occurs where these trees try to grow but are stunted by wind, ice and snow.”

Transition zones are places where change in ecosystems is most easily measured. “The alpine/subalpine transition zone is a sensitive environment,” says Fox. “Changes that occur here could be indications of what may eventually happen in other parts of the world.”

At Glacier Lakes, Fox monitors meteorological changes and looks for any patterns associated with changes to the area’s ecosystem, including, for example, rates of snowmelt.

“A snow pack that melts at a rapid rate will pour numerous chemicals that have been lying on the snow surface into the alpine lakes and streams,” Fox said. “These chemicals could alter the water to a degree that could affect annual spawning of cutthroat trout.”

Other experiments performed at the site include examining the chemical contents of soil and air, as well tests to determine the adaptability and survival rates of area plant species. “It is known that alpine plants can survive short-term climate changes, but their ability to withstand long-term changes is still unknown,” says Fox. In order to determine this, scientists at Glacier Lakes are developing procedures and devices to alter the climate and then study the effects of these manipulations.

According to Fox, many scientists believe the earth is warming because carbon dioxide and other pollutants are increasing in the atmosphere. These chemicals allow the sun’s energy into the atmosphere but trap heat reflected by the earth, a process also known as the greenhouse effect.

“If temperatures rise, the first effects will probably occur in the atmosphere,” Fox says. “The greenhouse effect could change the amount of rain and snow that falls, alter our seasons, and change the intensity of storms.”

Fox and his fellow scientists are seeking answers to such questions as: What will happen if the snow pack melts earlier each year? Will the tree-line of the majestic Rocky Mountains rise as the earth’s temperature rises? Will increasing global temperatures harm fish habitat in the sparkling mountain streams? If the ozone layer in the upper atmosphere is reduced, what effect will the resulting increased ultraviolet radiation have on the mountain ecosystem?

Fox says climate change would affect every aspect of natural ecosystems to some degree. In the Wyoming mountains, he says, changes in the wind, snow level and temperature could put stress on mountain lichen and wildflower communities. With the addition of pollutants such as acid rain, Fox postulates the combination of stresses might cause these communities to die.

However, the extent of change to the ecosystem will depend on how the climate and pollution change over time. It is possible that, given the inherent genetic flexibility of plants and animals, changes would not prove drastic, Fox says. As one area becomes too warm, the trees there might die and be replaced by other species, but the original species of tree might grow at higher elevations or migrate farther north, where the climate would be more suitable.

Fox points out that another interesting aspect of Glacier Lakes is that it is the headwaters of the North Platte River, a favorite recreation and fishing spot among outdoor enthusiasts. "The North Platte flows down through Wyoming and into Nebraska where it eventually joins forces with the mighty Missouri River," he says. "Changes to the headwaters would have repercussions throughout the entire water system."

The studies underway at Glacier Lakes are a few examples of the many research activities the Forest Service is conducting to predict effects of global climate change. The Forest Service operates the largest forestry research program in the world.

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Issued: July 19, 1989

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FARMERS HAVE CONSERVATION PLANS FOR 89 PERCENT OF HIGHLY ERODIBLE LAND

WASHINGTON, July 19—Conservation plans have been developed for 123.8 million acres, or 89 percent, of the nation's highly erodible cropland, the U.S. Department of Agriculture's Soil Conservation Service reported today.

"Our intent is that every farmer who wants a plan will get one by the deadline of Dec. 31 this year," said Wilson Scaling, SCS chief.

“We’ve helped farmers develop more than a million plans in the last three years. This is a tremendous effort by the nation’s farmers and USDA. There’s been a lot of innovation and cooperation and just plain hard work.”

The Food Security Act of 1985 calls for farmers to have an approved conservation plan by Dec. 31 on any highly erodible land they farm if they want to stay eligible for certain USDA farm program benefits.

“We still have 15 million acres that we estimate will need conservation planning before the end of the year,” said Scaling. “I encourage farmers to get in touch with the SCS and get their planning done as soon as possible.

“Farmers who do not have a plan approved by the Dec. 31 deadline will not only have to obtain an approved plan but will have to fully implement it before regaining eligibility for benefits,” Scaling said. “Farmers who have plans approved by Dec. 31 will have five years to implement their plans—until Dec. 31, 1994—and will remain eligible for program benefits during that period.”

To date, farmers have already fully implemented their plans on 35 million acres—25 percent of the nation’s highly erodible land.

The following table summarizes state-by-state highly erodible land (HEL) determinations completed, percentage of land for which conservation plans are completed and percentage of land for which plans have been implemented.

Chart follows

State	Total Highly Erodible Land (HEL) (acres)	HEL Deter- minations Completed (% of acres)	HEL Plans Completed (% of acres)	Systems Implemented (% of acres)
Alabama	1,600,000	100	100	17
Alaska	49,579	100	94	32
Arizona	706,374	100	100	82
Arkansas	530,765	94	84	27
California	900,000	100	86	21
Colorado	9,179,031	100	97	26
Connecticut	13,600	100	100	8
Delaware	10,651	100	93	34
Florida	210,000	100	80	45
Georgia	1,111,759	100	81	36
Hawaii	83,417	100	100	6
Idaho	3,659,279	95	72	23
Illinois	4,912,384	99	94	13
Indiana	2,736,341	100	78	17
Iowa	11,750,000	100	83	15
Kansas	13,059,645	100	100	21
Kentucky	4,200,000	82	67	21
Louisiana	177,994	100	83	31
Maine	150,060	75	72	40
Maryland	312,161	100	95	9
Massachusetts	15,325	100	100	17
Michigan	575,000	100	93	28
Minnesota	2,507,259	95	100	32
Mississippi	1,559,687	100	72	27
Missouri	6,300,566	100	93	24
Montana	13,716,179	91	89	34
Nebraska	9,703,876	91	82	30
Nevada	125,000	100	75	51
New Hampshire	6,200	97	90	19
New Jersey	71,683	100	82	6
New Mexico	1,720,736	100	97	20
New York	1,020,042	99	82	27
North Carolina	1,206,865	100	99	9

Continued on next page

North Dakota	7,014,776	79	78	8
Ohio	1,749,150	100	83	10
Oklahoma	4,739,825	100	92	20
Oregon	1,668,000	100	78	42
Pacific Basin	100	0	0	0
Pennsylvania	1,900,000	100	78	10
Puerto Rico	1,019	100	91	63
Rhode Island	494	100	100	116
South Carolina	417,673	87	72	38
South Dakota	3,631,321	100	92	17
Tennessee	2,513,100	100	72	8
Texas	12,026,372	100	100	46
Utah	527,288	100	96	76
Vermont	83,000	100	97	19
Virginia	1,027,815	100	100	10
Washington	3,652,000	99	80	21
West Virginia	65,000	100	100	33
Wisconsin	3,292,288	100	90	45
Wyoming	944,500	96	84	55
National Total	139,135,179	100	89	25

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SOUTHWEST BOLL WEEVIL PROGRAM SHOWS 94-PERCENT DROP IN PESTS IN FIRST YEAR

WASHINGTON, July 20—The Southwest boll weevil eradication program showed a 94-percent drop in populations of the destructive cotton pests for the first half of the season, compared to the same time period last year, according to the U.S. Department of Agriculture. The \$20 million program covers 385,000 acres in central and eastern Arizona and in Mexico.

“We’re extremely pleased with the mid-season statistics,” said James W. Glosser, administrator of USDA’s Animal and Plant Health Inspection Service. “We feel much of the success for this year’s lush stands of nearly weevil-free cotton can be attributed to last year’s cooperative efforts. USDA, Arizona, Mexico and the cotton growers themselves

cooperated to deliver a real blow to boll weevils in the Southwest," he said.

In the first half of 1988, program personnel in Arizona trapped almost 750,000 weevils. During the same period this year, fewer than 50,000 weevils have been trapped. Although the criterion used for deciding when fields must be treated is twice as stringent in this second year of the program—dropping from four to two boll weevils per field—the need to treat has dropped by 63 percent.

The program in Mexico is showing similar success, with a 90-percent drop in boll weevil populations and an 88-percent drop in field insecticide treatments.

The three-year program to eradicate boll weevils, the primary insect pest of U.S. cotton, expanded into central and eastern Arizona last year following a successful 1985-87 program in western Arizona, southeastern California and northeastern Mexico.

The few weevils still being found in this original eradication zone were mostly migrants from central Arizona. The reduction in weevils from Arizona has virtually eliminated any evidence of this pest in the original eradication area, Glosser said.

APHIS is cooperating with the cotton industry by providing equipment, administrative and technical assistance and 30 percent of program funds. Growers are paying 70 percent of operational costs through an assessment on harvested bales of cotton.

The three-year eradication plan uses data from pheromone-baited traps to pinpoint weevil populations, allowing chemical controls to be used judiciously for maximum effect. Malathion, a common lawn-and-garden insecticide, is applied by airplane or ground equipment to fields harboring weevil infestations.

The boll weevil was only an occasional pest in Southwest cotton until the 1970s when it adapted to desert conditions, enabling the weevil population to build up to damaging proportions. Boll weevils have plagued Southeast cotton growers for almost a century, costing producers there an estimated \$12 billion since its entry from Mexico in 1892. Growers in several Southeastern states also are engaged in a cooperative eradication program.

The current federal-state-industry program is slated to continue through December 1990. Thereafter, a monitoring program will locate any pockets of the pest before they can become established.

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